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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Hiroki Matsuoka

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EXAMINER

NGUYEN, TU MINH

ART UNIT

PAPER NUMBER

3748

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,205	Applicant(s) MATSUOKA ET AL.	
	Examiner TU M. NGUYEN	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20090327</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. An Applicant's Response filed on June 4, 2009 has been entered. Claim 7 has been amended. Overall, claims 1-3 and 5-8 are pending in this application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1, 5, 6, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Imai et al. (U.S. Patent Application 2004/0035101).**

Re claims 1 and 8, as shown in Figures 1, 2, and 4, Imai et al. disclose an exhaust purifying apparatus and an exhaust purifying method for an internal combustion engine on a vehicle, the apparatus comprising:

- a regeneration control section, wherein the regeneration control section controls regeneration of an exhaust purification catalyst (4) through heating control, in which fuel (post-injection) is supplied to the exhaust purification catalyst, thereby increasing a bed temperature of the catalyst; and

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- a determining section that determines whether the vehicle is driving downhill (in step S43, Imai et al. raise a temperature (Td) of an oxidation catalyst (3) to an activated temperature (Td1) before a post-injection is performed; in step S42, during said raising temperature step, they monitor the temperature Td and a running time (t), wherein Td is further influenced by an operating state (i.e., vehicle driving downhill) of the vehicle (see paragraphs 0016-0018)),

wherein the regeneration control section suspends the heating control when the determining section determines that the vehicle is driving downhill (see paragraph 0116), and

wherein the regeneration control section suspends the heating control only when the determining section continuously determines for a predetermined period (t4) that the vehicle is driving downhill.

Re claims 5-6, in the apparatus of Imai et al., while the heating control is suspended due to determination of the determining section that the vehicle is driving downhill, the regeneration control section resumes the heating control if the determining section determines that the vehicle is not driving downhill (step S42 with YES answer, steps S44a-S44b), wherein the regeneration control section resumes the heating control only when the determining section continuously determines for a predetermined period (t2) that the vehicle is not driving downhill.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al. as applied to claim 1 above, in view of Nakata (U.S. Patent 6,829,886).

Re claim 2, the apparatus of Imai et al. discloses the invention as cited above, however, fails to disclose that the determining section determines that the vehicle is driving downhill when the amount of fuel injected by a fuel injection valve of the engine is equal to or less than a predetermined amount and the vehicle speed is equal to or greater than a predetermined speed.

As shown in Figure 1, Nakata discloses an emission control apparatus of internal combustion engine to retard a deterioration of an emission control catalyst (3) during a fuel-cut operation of the engine. As depicted in step 901 in Figure 8 and indicated on lines 12-20 of column 14, Nakata teaches that it is conventional in the art to judge an operating state of the engine being in a low load condition (i.e., vehicle coasting) by determining at least one of a zero depression of an accelerator pedal and a vehicle speed equal to or greater than a predetermined speed in order to execute a fuel-cut operation (in step 903). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Nakata in the apparatus of Imai et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to improve a gas mileage of the vehicle.

Re claim 3, in the modified apparatus of Imai et al., as taught by Nakata, the determining section determines that the amount of fuel injected by the fuel injection valve is equal to or less than the predetermined amount when fuel cutoff control, in which fuel injection by the fuel injection valve is suspended, is being executed.

Allowable Subject Matter

6. Claim 7 is allowed.

Response to Arguments

7. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are not persuasive.

In response to applicant's argument that Imai et al. fail to disclose a determining section that determines whether the vehicle is driving downhill, wherein the regeneration control section suspends the heating control when the determining section determines that the vehicle is driving downhill (page 6 of the Response), the examiner respectfully disagrees.

The texts in paragraphs 0017-0018 and 0116 in Imai et al. read as follows:

“[0017] On the other hand, since the engine operation states is in various state, at the time when it is judged to start the regenerating mode operation, it is necessary to raise the exhaust gas temperature to not less than a fixed temperature, during the regenerating mode operation. So, when the exhaust temperature is low as in case of low speed operation, low load operation, and so on, an operation to heat up the exhaust gas is performed to coercively raise the exhaust gas temperature.” (emphasis added by examiner)

“[0018] For instance, in the idling operation, low speed operation or engine break functioning operation on the downhill etc, the fuel is burned scarcely, and exhaust gas at lower temperature flows into the continuously regenerating type DPF device, thus the catalyst temperature and the catalyst activity will be lowered.” (emphasis added by examiner)

“[0116] It should be noted that, though not illustrated, in the step S43, when a fourth specified time value t_4 has elapsed without the catalyst temperature T_d exceeding the first specified catalyst temperature T_{d1} , the regenerating mode operation is suspended to perform

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again the control for heating up the exhaust gas B1 is performed after when a fifth specified time value t5 has elapsed, and if this suspension is repeated by N times, specified number of times, the control for heating up the exhaust gas B1 is terminated to light up an alarm light affirming an abnormal state.” (emphasis added by examiner)

Based on the above disclosure, Imai et al. disclose a determining section (see paragraph 0116 above) that determines whether the vehicle is driving downhill (lower exhaust temperature is caused by engine break functioning operation on downhill (see paragraph 0018)), wherein the regeneration control section suspends a regeneration control when the determining section determines that the vehicle is driving downhill (see paragraphs 0017 and 0116). Thus, Imai et al. clearly disclose the claimed limitation in dispute.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Prior Art

9. The IDS (PTO-1449) filed on March 27, 2009 has been considered. An initialized copy is attached hereto.

Communication

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tu M. Nguyen/

TMN

Tu M. Nguyen

September 14, 2009

Primary Examiner

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